

ABSTRACT

5 Various types of diamond tools are provided by utilizing the fact that a synthetic single crystal diamond for use in a tool having a nitrogen content of 3 ppm or less exhibits an enhanced hardness in a (100) plane in a $\langle 111 \rangle$ direction and simultaneously the reduction in defects. The above synthetic single crystal diamond is synthesized by the temperature difference method under an ultra high pressure at high temperature and contains, in its crystals, nickel introduced by atomic substitution or boron and nickel introduced by atomic substitution.